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**Advances in soil moisture measurements with the use of microwave techniques**

*Abstract:* In this talk we present results of a long-term collaboration between the Warsaw University of Technology and the Institute of Agrophysics, Polish Academy of Sciences in the area of soil moisture measurements. This collaboration resulted in a high-speed measurement system for laboratory reference measurements of 0.05-3 GHz soil dielectric spectrum in 0-40 deg. C. temperature range, and in an innovative IoT soil-moisture sensor for field applications based on 0.05-2 GHz micro VNA. Details of these solutions will be presented and prospects for further development will be discussed.